

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR NORTH LAKE WASHINGTON POPULATION (Tier 1 Subareas)	
<p>POLICY/INSTITUTIONAL CONTEXT:</p> <p><i>Jurisdictions:</i> Redmond, Sammamish, Woodinville, Bothell, Kenmore, Mill Creek, Everett, King County, Snohomish County</p> <p><i>Growth pressures (inside UGA):</i> Redmond, Sammamish, Woodinville, Bothell, Kenmore, Mill Creek, Redmond Ridge Urban Planned Development (UPD), unincorporated King Co (including Bothell PAAs, Redmond PAAs), and unincorporated Snohomish Co. (including Maltby UGA, Bothell Municipal Urban Growth Area (MUGA), Mill Creek MUGA, Everett MUGA).</p> <p><i>Percent of basin inside UGA:</i> UGA runs through reach 6 of Bear Creek (in Lower Bear Subarea); 16% of all three Tier 1 subareas combined is inside UGA.</p> <p><i>Program/mitigation opportunities:</i> Brightwater mitigation, I-405 mitigation, Bear Creek Basin Plan (adopted by King Co. Council in 1992, resulted in stormwater changes, and adoption of 150 ft. stream buffers and 35% clearing limit in 1995)</p>	<p>SCIENCE CONTEXT:</p> <p><i>Watershed evaluation rating:</i></p> <ul style="list-style-type: none"> • <i>Lower Bear</i> Subarea: Tier 1 - Core Chinook use; Moderate watershed function • <i>Upper Bear</i> Subarea: Tier 1 - Core Chinook use; High watershed function • <i>Cottage Lake</i> Subarea: Tier 1 - Core Chinook use; High watershed function <p><i>Watershed evaluation summary:</i></p> <p><u><i>Lower Bear Subarea:</i></u> Relative impact factors are:</p> <ul style="list-style-type: none"> • High – flow volume • Moderate – total impervious area, % of high gradient streams • Low - road crossings <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams, wetland area • Moderate – riparian forest cover • Low – forest cover <p><u><i>Upper Bear Subarea:</i></u> Relative impact factors are:</p> <ul style="list-style-type: none"> • Moderate – flow volume, % of high gradient streams • Low - road crossings, total impervious area <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High – forest cover, riparian forest cover, wetland area • Moderate – % of low gradient streams <p><u><i>Cottage Lake Subarea:</i></u> Relative impact factors are:</p> <ul style="list-style-type: none"> • Moderate – flow volume • Low - road crossings, total impervious area, % of high gradient streams <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High – wetland area, % of low gradient streams • Moderate – forest cover, riparian forest cover

**LAND USE ACTIONS FOR BEAR/COTTAGE LAKE CREEKS (NLW TRIBUTARIES)
BASED ON TECHNICAL RECOMMENDATIONS IN
WRIA 8 CONSERVATION STRATEGY**

Notes:

- 1) Technical priorities from the WRIA 8 Conservation Strategy are listed in bold; recommended land use actions are listed for each technical area. Most technical recommendations are interrelated; many land use actions address multiple technical priorities.
- 2) Note that local jurisdictions in these subareas are doing or planning to do many of these actions.
- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.

Identify and protect headwater areas, wetlands, and sources of groundwater (e.g., seeps and springs) to maintain natural hydrologic processes and temperatures that support Chinook. Sources of groundwater inflow to Cold Creek should be identified and protected.

- There is considerable growth pressure on the Bear/Cottage Lake Creek headwater areas; jurisdictions should hold firm and not move the Urban Growth Boundary. See detail on this action described below under *protect forest cover*.
- N1 Protect headwater wetlands, seeps, and groundwater recharge areas through critical areas ordinances, critical aquifer recharge area protections (CARAs), incentives, and acquisition. Support these approaches with appropriate public outreach to convey reasons behind regulations and other programs to protect groundwater sources. Jurisdictions should coordinate with appropriate entities to nominate high quality headwaters and spawning habitat as Outstanding Resource Waters (through Wash. Department of Ecology guidelines) to increase protection of these areas under the Clean Water Act.
- N2 In Upper Bear, better mapping is needed in the headwaters to determine critical groundwater recharge areas to protect.
- N3 Planning and implementation of SR 522 expansion should try to minimize impacts on Bear and Cottage Lake Creek headwaters, e.g., locate as far away as possible from headwaters, minimize road width, and minimize stream crossings.
- N4 Determine sources and flow paths of the Cold Creek groundwater springs in Cottage Lake Creek and develop measures to adequately protect them. Cold Creek headwaters cross the Urban Growth Boundary; growth within Woodinville should be managed to minimize impacts. Critical aquifer recharge area protections (CARAs) should be used to protect groundwater sources for preserving salmon habitat, as well as for water quality for domestic water supplies.

Protect and restore forest cover, soil infiltrative capacity and wetlands, and minimize increases in impervious surfaces, to maintain watershed function and hydrologic integrity (especially maintenance of sufficient baseflows).

- N5 Continue to absorb majority of growth inside the Urban Growth Area (UGA), while protecting and restoring forest and promoting low impact development, to maintain and improve water quality and flows in urban areas.
- N6 Outside the UGA, there is considerable growth pressure in Bear/Cottage Lake Creeks as urban-type development and related infrastructure, such as roads and sewer/water lines, continue to expand. Examples include Maltby UGA, Redmond Ridge UPD, and city parks. Jurisdictions should not move the Urban Growth Area boundary, unless such change is beneficial to salmon, and they should discourage urban densities and the extension of sewer lines outside the UGA. Jurisdictions should encourage low impact development, clustering, and other approaches to protect environmental functions in rural areas. The Snohomish County Reduced Drainage Discharge Demonstration Program and the Snohomish Sustainable Development Task Force provide opportunities for public and private stakeholders to work together to plan and implement low impact development techniques. King Co. should continue to provide technical assistance to small forest landowners to encourage improved forest management through forest stewardship plans. It may be necessary to acquire high quality rural properties in the vicinity of urban areas to insure their long-term protection.
- N7 Continue the approach taken in King County during the past decade to protect forest cover and riparian buffers, including: adoption of stronger regulations, providing a range of incentives to protect habitat (e.g., acquisition, current use taxation, conservation easements), offering a basin steward to do targeted outreach to streamside landowners, and providing forest stewardship plans. Evaluate which element(s) were most effective in protecting and restoring habitat and try to replicate these again in Bear and in other watersheds; this could be an element of adaptive management. Strong enforcement, and prohibiting exemptions and variances from clearing/grading and buffer regulations are key to effectiveness of any regulatory approach taken.
- N8 Jurisdictions should develop a policy on lands acquired for habitat purposes to manage the types and level of human use to ensure that habitat goals are not threatened by overuse or competing interests. Different partnerships among local jurisdictions, developers, and non-governmental organizations should be tried to maintain these lands, including stewardship and monitoring for adaptive management over the long term.

- N9 Protect wetland function to attenuate peak flows wherever possible in the basin, through adoption and enforcement of adequate wetland buffers through critical areas ordinances.
- N10 The Upper Bear subarea is in relatively good shape and is a regionally significant resource area. King and Snohomish Counties should adopt and strictly enforce stream and wetland buffers and forest cover protections through their critical areas ordinance updates. King County completed their CAO update in 2004. Snohomish County's transferable development rights (TDR) program for farmland could be extended to protect high quality salmon habitat areas. Forest cover protections should account for site geology, soils, topography, and vegetation to maximize retention and infiltration.
- N11 Protect spawning areas throughout Cottage Creek, through buffer protections, prohibiting floodplain development, forest protection, minimizing impervious area, livestock BMPs and cost share, etc.

Protect and restore riparian vegetation to improve channel stability, provide sources of large woody debris that can contribute to creation of pools, and reduce peak water temperatures that favor non-native species.

- See recommendation above under *protect forest cover*, to continue approach taken during past decade to protect forest and riparian areas through stewardship, incentives, and regulation.
- N12 Adopt and enforce regulations to protect existing riparian buffers, including implementation of livestock ordinances. Jurisdictions need to limit impacts of trails and other facilities in buffers. Redmond is currently doing their Shoreline Master Program and critical area ordinance updates; support the city's effort to be more proactive about protecting buffers through these regulatory updates, and the continued use of incentives (e.g., fee simple purchase and conservation easements) to protect riparian corridors.
- N13 Encourage reforestation in upland and riparian areas, e.g., through streamlined permit process, tax breaks, mitigation banking and other flexible tools and incentives. Conifer underplantings in buffers should be encouraged. Properties where there are already conservation easements or that are in the King County PBRS program are potential locations for restoration (from site specific basinwides recommendations). Support King County's Urban Forestry Program to increase forest cover and forest health on public lands in urban areas.
- N14 Jurisdictions should address encroachments into Native Growth Protection Easements; this has been identified as a particular problem in reach 3 of Cottage Lake Creek.

Protect and restore floodplain connectivity and increase off-channel habitat by minimizing road crossings, reducing channel confinement, and removing floodplain structures. Protect and increase channel complexity, including large, woody debris, which contribute to channel stability and development of pools, trap sediment, and reduce water temperature.

- N15 Limit new development in floodplains; develop and apply standards which minimize impacts to salmon. The number and width of new roads should be minimized to maintain floodplain connectivity, through transportation planning and implementation.
- N16 In Lower Bear and in Cottage Lake Creek, where property owners have ditched and armored the creek, use education and incentives to encourage restoration of channel complexity and riparian condition.
- N17 Where wetland mitigation banking is being considered along Lower Bear, adopt a policy that wetland banking needs to consider salmon habitat needs first. Some wetland banks have precluded flooding and restoration of floodplain functions, which limits opportunities for salmon habitat restoration.

Protect and restore water quality from fine sediments, metals, high temperatures, and bed-scouring high flows. Adverse impacts from non-point source pollution (particularly road runoff) should be prevented through stormwater BMPs and minimization of number and width of roads.

- N18 Identify sources and adopt source control of fine sediments and metals in mainstems and tributaries through stormwater management erosion and sediment controls, clearing and grading ordinances, and livestock management programs. Likely sources of sediment include new construction during clearing and grading, sand on roads, horse farms and over pasturing. Adopt and enforce regulations and best management practices consistent with Washington Department of Ecology's 2001 Stormwater Management Manual (or beyond), as part of the NPDES Phase 1 and Phase 2 permit requirements.
- N19 Outside UGA, jurisdictions should enforce livestock ordinances, making highest priority those areas that are most susceptible due to fine soils. Work with farmers to adopt and implement farm plans to

address water quality (e.g., to reduce fine sediment inputs) and habitat management (e.g., to restore riparian areas). Coordinate with other stewardship and education programs (e.g., Horses for Clean Water).

- N20 Adopt stormwater provisions to address high flows, flashiness, and protection of base flows, including forest retention, and low impact development (LID) BMPs. Low impact development should be encouraged through incentives, training, demonstration projects, and regulations to increase stormwater infiltration wherever possible.
- N21 Adverse impacts from road runoff should be prevented through stormwater BMPs and by minimizing number and width of roads. Road widening projects should be designed to minimize impacts, and can provide mitigation opportunities. State/local transportation departments should address runoff from all roads and retrofit existing roads as part of major maintenance, expansion or upgrade projects. Stormwater impacts from major transportation projects (for new and expanded roadways proposed during the next ten years) should be addressed.
- N22 In Lower Bear, there's limited water quality treatment for road runoff; work with Wash. DOT and local jurisdictions (e.g., King Co. Roads) to pursue opportunities to retrofit existing roadways with stormwater BMPs, particularly on SR 520 and Avondale Road.
- N23 In Lower Bear, commercial/industrial development areas should be investigated for water quality and runoff issues and potential stormwater facilities planned and built.

Provide adequate stream flow to allow upstream migration and spawning. Impact of surface water and groundwater withdrawals on flow conditions should be investigated and addressed.

- N24 Address maintenance and restoration of instream flows at all levels of government, recognizing that different aspects of the problem are controlled by different government agencies, e.g., water withdrawals are regulated by State Dept. of Ecology, low impact development techniques are affected by local development standards and practices.
- N25 Investigate and address impact of municipal and other water withdrawals (including Class A water utilities, Class B systems, irrigation pumps, and private wells) on flow conditions throughout basin. As population increases, demand on municipal systems will grow. As water rates increase, incidence of illegal withdrawals and exempt wells may increase. Work closely with Dept. of Ecology, local health departments, and water suppliers on regulations, enforcement, incentives, and education related to these withdrawals and maintaining baseflows.
- N26 Certain groundwater withdrawals are exempt from Ecology regulation; these exempt wells include wells serving residences not exceeding 5000 gallons a day (also referred to as 6-packs, or not more than 6 homes on one well), watering of a lawn or garden not exceeding ½ acre. Work with local departments of health to improve enforcement related to exempt wells. Policies prohibiting or discouraging multiple exempt wells may be necessary.
- N27 Adopt/enforce stormwater regulations and BMPs to address high and low flows, including forest retention, low impact development, and infiltration standards. Explore opportunities during redevelopment to improve management of flows and water quality by redesigning and retrofitting stormwater facilities. Identify opportunities to retrofit stormwater retention/detention facilities to better retain, release, treat, and infiltrate stormwater at public and private facilities.
- N28 Promote availability of water conservation education and incentive programs to decrease household, commercial, landscaping, and agricultural water consumption throughout the watershed.

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR SAMMAMISH RIVER (Migratory Tier 1)	
POLICY/INSTITUTIONAL CONTEXT:	SCIENCE CONTEXT:
<p>Jurisdictions: Kenmore, Bothell, Woodinville, Redmond, King County</p> <p>Growth pressures (inside UGA): Kenmore, Bothell, Woodinville, Redmond, King County (including Planned Annexation Areas - PAAs)</p> <p>Percent of basin inside UGA: All except portion of reach 4 is within UGA [need to calculate %?]</p> <p>Program/mitigation opportunities: Brightwater mitigation, I-405 mitigation, mitigation banks, Sammamish River Action Plan</p>	<p>Watershed evaluation rating:</p> <ul style="list-style-type: none"> • <i>Lower Sammamish Valley</i> Subarea: Tier 1 – Migratory area; Moderate watershed function • <i>Upper Sammamish Valley</i> Subarea: Tier 1 – Migratory area; Moderate watershed function <p>Watershed evaluation summary: [to be completed if applicable]</p> <p><u>Lower Sammamish Valley Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • <p><u>Upper Sammamish Valley Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> •

LAND USE ACTIONS FOR SAMMAMISH RIVER BASED ON TECHNICAL RECOMMENDATIONS IN WRIA 8 CONSERVATION STRATEGY

Notes:

- 1) Technical priorities from the WRIA 8 Conservation Strategy are listed in bold; recommended land use actions are listed for each technical area. Most technical recommendations are interrelated; many land use actions address multiple technical priorities.
- 2) Note that local jurisdictions in these subareas are doing or planning to do many of these actions.
- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.

Protect and restore cool clean water sources and inflows to the Sammamish River by protecting and restoring large and small tributaries to the Sammamish River, and protecting sources of groundwater. Impact of surface and groundwater withdrawals on flow conditions should be investigated and addressed. Protect and restore water quality.

- N29 Reduce unauthorized water withdrawals. According to Sammamish River Action Plan, there are a significant number of unauthorized water withdrawals that adversely effect base flow and temperature. These include: un-permitted withdrawals, permitted withdrawals that may exceed their authorized volumes, and exempt wells. Specific actions include:
- ✓ Highest priority should be enforcement against illegal withdrawals.
 - ✓ Determine extent of illegal withdrawals in all sectors, e.g., residential, commercial, industrial, and agricultural.
 - ✓ Work with WA Department of Ecology to ensure that issuance of new water rights will not adversely affect flows or water quality in the Sammamish River.
 - ✓ Work with the WA Department of Ecology and the Seattle-King County Department of Public Health to develop mechanisms for metering water withdrawals at locations where there is significant potential for adverse impacts to the river from excessive or cumulative water withdrawals.
 - ✓ Use regional salmon funds to fund a position at Dept. of Ecology to educate about and enforce illegal withdrawals in Bear Creek basin.
 - ✓ Exempt wells (also referred to as 6-packs) are subject to Seattle-King Co. Dept. of Public Health site review. WRIA jurisdictions should work with Seattle-King Co. Dept. of Public Health, King County DDES, and state Dept. of Ecology to more effectively monitor and enforce the limit to ½

acre of irrigated land per exempt well. Could also encourage King County to place more restrictions on use of exempt wells. Note that proposed revisions to KC Comprehensive Plan include policies that would limit 6 packs (e.g., no more than one exempt well per development), and encourage users to hookup to existing water systems.

- N30 Research potential for reclaimed water facilities. King County is constructing a demonstration reclaimed water production facility near NE 116th St. by 2007. Need to investigate grey water usage, and related legal and regulatory issues?
- N31 Continue to investigate presence and quality of groundwater in Sammamish River corridor. King Co. has conducted some initial studies.
- N32 Research groundwater sources in vicinity of Norway Hills, Bothell. Protect cold groundwater sources as necessary. (Near Term Action Agenda (NTAA) project P3)
- N33 Increase water conservation in Sammamish watershed to increase and maintain summer base flows and reduce summer water temperatures. Reduction of groundwater and surface water withdrawals is needed. Reduction of groundwater withdrawals in Bear Creek basin is particularly important since Bear confluence is in vicinity of where river experiences its warmest temperatures (Sammamish River Action Plan, p.70). Specific tools include:
- ✓ Adopt more residential and commercial water conservation programs, such as those administered by Seattle Public Utilities.
 - ✓ Provide education, incentives, and local code provisions to encourage use of drought tolerant landscaping in all sectors.
 - ✓ Adopt conservation-based rate structures to encourage decreased water use.
 - ✓ Shift water supply sources to maximize summer flows in Sammamish R. and tributaries. For example, could City of Redmond use more Tolt River water between June and October, and therefore less water from local wells during those months when flows are greatest issue in Sammamish? Use BAS (including normative flows study) to consider ecological consequences of any shift in withdrawals and flows.
 - ✓ Work with Central Puget Sound Water Suppliers Forum to identify alternative water supply sources, maximize interties, and regulate timing of withdrawals to maximize summer flows in Sammamish watershed.
 - ✓ Use regional salmon funding to cover extra costs to local jurisdictions if they shift sources and timing of water supply purchases to benefit salmon.
- N34 Protect and restore water quality and flows in tributaries through critical areas ordinances (e.g., forest retention standards and aquatic buffers), stormwater management programs, groundwater protection (through King County's Groundwater Protection Program and the Redmond-Bear Creek Valley Groundwater Protection Committee), and other regulations and incentives.
- N35 Address stormwater impacts from residential, commercial, industrial and agricultural uses, through NPDES permit updates. Note that details on stormwater standards, including Dept. of Ecology's 2001 Stormwater Management Manual and Tri-County guidance, are included in AppendixD. General stormwater recommendations include:
- ✓ Promote low impact/sustainable development along shoreline and throughout sub-areas (e.g., develop guidelines, offer simpler permit review, reduce requirements for capital projects). Infiltration of stormwater, e.g., as a result of LID practices, is critical in Sammamish River as it affects flows as well as water quality.
 - ✓ Address high stormwater runoff in urban creeks (which drain into the river), through low impact development, on-site stormwater detention for new and redeveloped projects.
 - ✓ Enhancement of tributary mouths is high priority for restoration projects. Better control of urban runoff into these tributaries is needed to control water quality impacts.
- N36 Address water quality issues, including pesticides and herbicides, through stormwater regulations, best management practices, education, and incentives. Effort should be targeted at agricultural, commercial (including golf courses), industrial, and residential landowners.
- N37 Encourage agricultural practices which benefit salmon through a variety of means:
- ✓ Maintain agricultural uses in the Sammamish Valley with improved practices for water quality and riparian habitat. Encourage King County to work with farmers in Sammamish Agricultural Production District (APD) to adopt and implement farm plans, which address water quality (including sediments, excess nutrients), livestock management and horticultural practices, and fish and wildlife habitat management and restoration. Note that majority of agriculture in Sammamish APD is horticulture; horticultural farm plans are voluntary unless there has been a water quality violation.

- ✓ Use King County's Agricultural Drainage Assistance Program (ADAP), Cost Share Program, and farm plans to encourage riparian plantings where temperature is a problem.
- ✓ Assess potential impact of water temperature in small lateral tributaries on Sammamish River temperature. Determine change in temperature in the lateral tributaries as they traverse the valley, depending on degree of shading from riparian vegetation (or lack thereof), and relative temperature of the water when it enters the river. This research will help determine priorities for public monies (e.g., shading the small lateral tributaries versus revegetating at mouths where tributaries enter the river). Note that tall riparian plantings can create shading problems for horticulture.
- ✓ Involve agricultural owners in developing and implementing conservation actions. Clarify what is needed for salmon habitat restoration and protection and involve agricultural owners in figuring out how to get there. Recognize constraints on properties, especially those under the Farmlands Preservation Program.
- ✓ Use all available tools to bring all farms into compliance with water quality standards. Continue to work with agricultural landowners (using regulatory and incentive tools) to minimize erosion and pesticide runoff.
- ✓ Look into alternative forms of agriculture that would be more compatible with the Sammamish River ecosystem (e.g., blueberries which grow in wetland setting).

N38 Work with Dept. of Ecology on water quality issues listed in TMDLs. Sammamish River is on 303(d) list for temperature, elevated fecal coliform bacteria levels, low dissolved oxygen, and pH.

Protect and restore riparian vegetation along the mainstem and tributaries to the Sammamish River to provide shade and reduce water temperatures as well as provide future sources of large woody debris. In reaches 3 through 6, restore floodplain connections and increase meandering of river by regrading river banks, creating flood benches at or below ordinary high water mark.

- N39 When implementing revegetation requirements and incentives, consider needs and opportunities for regrading banks to create shallow juvenile rearing habitat. Regrading should occur first (prior to revegetation), to avoid wasted effort and to make revegetation part of a larger restoration of the river channel.
- N40 Adopt and enforce adequate riparian and wetland buffers on mainstem and tributaries. While some jurisdictions already have strong protections in place, consistent and effective enforcement is important. Where riparian buffers, wetlands, or stream mouths have been restored, protect them from any further degradation through critical areas ordinances and Shoreline Master Programs.
- N41 Many structures along the river and tributaries are nonconforming with development regulations. The degree of nonconformity will become even greater as buffers and other riparian protections become more restrictive. In order to decrease the level of nonconformity over the long term (e.g., 50 years), jurisdictions should encourage or require that development come into conformity, depending on the degree of redevelopment. A sliding scale could be applied (e.g., based on redevelopment thresholds), where the greater the degree of redevelopment, the greater the expectation that the development come into compliance.
- N42 Encourage bank regrading and revegetation of riparian buffers during new construction and redevelopment in exchange for regulatory flexibility. Analysis of site-specific tradeoffs – including upland land use impacts to the river - would be necessary to insure a net benefit to salmon. Examples of regulatory flexibility include:
- ✓ Reductions in building setbacks, modest increases in lot coverage or impervious area (or increased density for multi-family) could be allowed if applicant regrades bank and/or restores a degraded riparian buffer.
 - ✓ Reduce prescriptive buffer widths if buffers are planted with appropriate native vegetation and a science-based evaluation determines that no negative impact results and a reduction is appropriate.
 - ✓ Allow or encourage variances from front yard setbacks to avoid allowing variances from back yard setbacks that would cause development to encroach further toward the river or a tributary.
- N43 Offer incentives to encourage voluntary bank regrading and revegetation of riparian buffers. Incentives include:
- ✓ Provide expertise (e.g., provide templates for riparian planting plan, bank design)
 - ✓ Expedite permit process at local, state and federal levels (e.g., allow more restoration activities as shoreline exemptions to make permitting faster and less costly)

- ✓ Provide and streamline applications for tax breaks through programs such as the Public Benefit Rating System (PBRs), if landowner commits to stewardship activities (above and beyond regulatory protection requirements) through permit process. PBRs would likely provide most benefit to/be most appropriate for larger, suburban lots within urban areas or in rural areas.
 - See agricultural recommendations above under *cool water sources*, for agricultural actions to improve riparian buffers.
- N44 Regulatory flexibility and incentives for bank regrading and revegetation should also address maintenance responsibilities for these riparian buffers.
- N45 Support private actions by developers to restore and/or improve shorelines as part of redevelopment projects. As an example, the LakePointe project in Kenmore will complete a significant site cleanup and restore its Sammamish River shoreline as part of the project.
- N46 Support education and demonstration programs, for shoreline property owners and landscape and development contractors, to show real world examples of river bank restoration and revegetation.
- N47 Local jurisdictions should share information among themselves about ordinance language, templates and specifications.
- N48 Work with U.S. Army Corps of Engineers to revise maintenance practices on Sammamish R. banks and levees in order to improve and restore salmon habitat functions. (NTAA project P6) Modeling for Sammamish R. Transition Zone project may provide useful information on restoration projects and flood management.

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR NORTHERN LAKE WASHINGTON (Migratory Tier 1)	
POLICY/INSTITUTIONAL CONTEXT: <i>Jurisdictions:</i> Seattle, Lake Forest Park, Kenmore, Kirkland, King County <i>Growth pressures (inside UGA):</i> Seattle, Lake Forest Park, Kenmore, Kirkland Planned Annexation Area (PAA in King Co.), Kirkland <i>Percent of basin inside UGA:</i> 100% <i>Program/mitigation opportunities:</i>	SCIENCE CONTEXT: <i>Watershed evaluation rating:</i> <ul style="list-style-type: none"> • <i>West Lake Wash.</i> Subarea: Tier 1 – <i>Migratory area; Lower</i> watershed function • <i>East Lake Wash.</i> Subarea: Tier 1 – <i>Migratory area; Lower</i> watershed function <i>Watershed evaluation summary:</i> Not applicable

**LAND USE ACTIONS FOR NORTH LAKE WASHINGTON
MIGRATORY AREA BASED ON TECHNICAL RECOMMENDATIONS
IN WRIA 8 CONSERVATION STRATEGY**

Notes:

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- 2) Note that local jurisdictions in these subareas are doing or planning to do many of these actions.
- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.

Reduce predation to outmigrating juvenile Chinook by: reducing bank hardening, restoring overhanging riparian vegetation, replacing bulkheads and rip-rap with sandy beaches with gentle slopes, and use of mesh dock surfaces and/or community docks.

- N49 Use WRIA 8 Conservation Strategy as one of the “best available science” resources during current critical areas ordinance (CAO) revisions and Shoreline Master Program (SMP) revisions. Recognize that softening or removal of bulkheads is the most important action to improve shoreline habitat. In addition, riparian/shoreline buffers should be increased to the extent practicable.
- N50 This area is mostly developed, with little undisturbed landscape left to protect, and much of the shoreline is privately owned. Many structures in the lake shore area are nonconforming with development and environmental regulations; the degree of nonconformity will become even greater as buffers and other shoreline protections become more restrictive. In order to decrease the level of nonconformity over the long term (50-100 years), jurisdictions should encourage or require that development come into conformity, depending on the degree of redevelopment. A sliding scale could be applied, where the greater the degree of redevelopment, the greater the expectation that the development come into compliance.
- N51 Discourage construction of new bulkheads. Develop guidelines to better assess need for bulkheads and restrict height to that necessary to protect the structure; height increases would be allowable only after appropriate analysis based on fetch, waves, wind velocity and direction, etc. Guidelines should take into account tradeoffs with other environmental impacts (e.g., presence of contaminated soils) and public safety hazards.
- N52 Encourage salmon friendly shoreline design during new construction and redevelopment of shoreline properties, and properties that border tributaries, by offering regulatory flexibility. However, analysis of these tradeoffs – including upland land use impacts to the lake - would be necessary to insure a net benefit to salmon. Examples of regulatory flexibility include:

- ✓ Reductions in building setbacks, modest increases in lot coverage or impervious area (or increased density for multi-family) could be allowed if applicant removes, sets back or softens bulkhead and restores shoreline “vegetative management area” (riparian/lakeshore buffer).
 - ✓ Reduce prescriptive buffer widths if buffers are planted with appropriate native vegetation and a science-based evaluation determines that no negative impact results.
 - ✓ Allow or encourage variances from front yard setbacks to avoid allowing variances from back yard setbacks and/or riparian buffers that would cause development to encroach further toward the lake.
- N53 Offer incentives to shoreline property owners to voluntarily remove bulkheads, revegetate shoreline, improve habitat at creek mouths, change dock design. Incentives include:
- ✓ Provide expertise (e.g., provide templates for shoreline planting plan, bulkhead design)
 - ✓ Expedite permit process at local, state and federal levels (e.g., allow more restoration activities as shoreline exemptions to make permitting faster and less costly)
 - ✓ Provide and streamline applications for tax breaks through programs such as Public Benefit Rating System (PBRs) if landowner commits to stewardship activities (above and beyond regulatory protection requirements) through permit process. PBRs would likely provide most benefit to/be most appropriate for larger, suburban lots within urban areas.
 - ✓ Provide incentives for establishment of community docks or mooring buoys, rather than individual lot docks.
- N54 Address disincentive in Shoreline Management Act that can discourage shoreline restoration because ordinary high water mark (OHWM) can be moved landward as a result of removal of a bulkhead, resulting in additional use restrictions placed on adjacent or applicant’s property. Local jurisdictions have some ability to limit impact of setback from OHWM, but cannot move the 200-foot shoreline jurisdiction. May require change at state level.
- N55 Support joint effort by NOAA Fisheries, WDFW, USACOE, USFWS to develop specifications for new and expanded piers. Goal of this effort is for streamlined federal/state permitting for piers that meet these specifications (affects Corps Section 404, Section 401 water quality certification, HPA). COE is developing Regional General Permit for new and expanded overwater structures in Lake Washington. NOAA Fisheries hopes to work with local jurisdictions to adopt similar permit requirements at local level; they will meet with lakeshore jurisdictions throughout spring '04.
- N56 Support development of federal/state/local specifications and streamlined permitting for salmon friendly bulkheads.
- N57 Explore need for regulation and/or education related to impacts of power boat speed near shorelines on bulkheads, shoreline vegetation. Power boats are getting bigger; determine if there is a need to set guidance for boat speed within a certain distance of shoreline, depending on the location in the lake.
- N58 Research pros and cons of allowing fill at edge of lake, as a way of providing a vegetated buffer. This could balance desire by property owners to maintain usable yard area and need to increase shoreline buffer for salmon habitat. Look into scientific validity and legal/institutional issues. Will need to evaluate such projects on a site-by-site basis.
- N59 Offer landscape, bulkhead, or dock contractor training and certification programs.
- N60 Support education and demonstration programs so that shoreline property owners can see examples of how salmon friendly bulkheads, docks, etc. actually work, and will therefore better understand and accept regulations/incentives about these docks and bulkheads.
- N61 Local jurisdictions should share information among themselves about ordinance language, templates and specifications.
- N62 Jurisdictions should continue to apply shoreline restoration, appropriate use of pesticides, native landscaping, etc. in parks, street ends, and other publicly owned property.

Protect and restore water quality in tributaries and along shoreline. Restore coho runs in smaller tributaries as control mechanism to reduce the cutthroat population.

Reconnect and enhance small creek mouths as juvenile rearing areas.

- N63 Protect and restore water quality and other ecological functions in tributaries to reduce effects of urbanization and reduce conditions which encourage cutthroat. Protect and restore forest cover, riparian buffers, wetlands, and creek mouths by revising and enforcing critical areas ordinances and Shoreline Master Programs, incentives, and flexible development tools.

- N64 Address stormwater impacts from residential, commercial, industrial uses, through NPDES permit updates, consistent with Dept. of Ecology's 2001 Stormwater Management Manual (or beyond, e.g. to Tri-County guidance - see Appendix D). General stormwater recommendations include:
- ✓ Promote low impact/sustainable development along shoreline and throughout sub-areas through regulations, education, and incentives (e.g., develop guidelines, offer simpler permit review, reduce requirements for capital projects).
 - ✓ Adopt policies on pesticide use consistent with the January 2004 federal ruling banning certain pesticide use along salmon-bearing streams in the northwest. Application of pesticides should be in accordance with source control best management practices (BMPs) in Ecology's 2001 Stormwater Management Manual.
 - ✓ Address high stormwater runoff in urban creeks (which drain into Lake Washington), through low impact development, on-site stormwater detention for new and redeveloped projects.
 - ✓ Address point sources that discharge directly into the lake.
 - ✓ Address stormwater impacts from major transportation projects (for new and expanded roadways proposed during the next ten years). Address stormwater impacts from State Route 520 Bridge.
- N65 Address water quality associated with marinas; note that marinas are regulated directly by Dept. of Ecology.
- N66 Reevaluate government policies toward aquatic weed control to minimize impacts to salmon habitat; coordinate with relevant agencies.

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR NORTH LAKE WASHINGTON POPULATION (Tier 2 subareas) [Note: Kelsey Creek is addressed separately]	
POLICY/INSTITUTIONAL CONTEXT: <i>Jurisdictions:</i> Redmond, Sammamish, Woodinville, Bothell, Mill Creek, Everett, King County, Snohomish County <i>Growth pressures (inside UGA):</i> Redmond, Sammamish, Woodinville, Bothell, Mill Creek, Redmond Ridge Urban Planned Development (UPD), unincorporated King Co. and unincorporated Snohomish Co. (including Maltby UGA, Bothell Municipal Urban Growth Area (MUGA), Mill Creek MUGA, Everett MUGA). <i>Percent of basin inside UGA:</i> North Creek is almost entirely within the UGA (incorporated areas or MUGAs for Everett, Mill Creek, and Bothell); a small part of Little Bear is inside UGA (Woodinville, Maltby UGA, and Silver Firs area), while majority is outside UGA; Evans Creek is divided between inside UGA (Sammamish, Redmond, Redmond Ridge UPD) and outside. <i>Program/mitigation opportunities:</i> <ul style="list-style-type: none"> • I-405 watershed characterization • Brightwater wastewater treatment facility mitigation plan and funding • North Creek Fecal Coliform Total Maximum Daily Load, Submittal Report, June 2002, Ecology Publication No. 02-10-020 • North Creek Fecal Coliform Total Maximum Daily Load, Detailed Implementation Plan, September 2003, Ecology Publication No. 03-10-047 • Basin plans including: North Creek Watershed Management Plan, September 6, 1994, Snohomish County Public Works Surface Water Management • Snohomish County Drainage Needs Reports for North Creek [and others?] • Little Bear Creek Corridor Habitat Assessment, prepared for City of Woodinville by David Evans and Associates, July 2002 	SCIENCE CONTEXT: <i>Watershed evaluation rating:</i> <ul style="list-style-type: none"> • <i>Lower North</i> Subarea: Tier 2 - Satellite Chinook use; Moderate watershed function • <i>Upper North</i> Subarea: Tier 2 - Satellite Chinook use; Moderate watershed function • <i>Little Bear</i> Subarea: Tier 2 - Satellite Chinook use; Moderate watershed function • <i>Evans</i> Subarea: Tier 2 - Satellite Chinook use; High watershed function <i>Watershed evaluation summary:</i> <u><i>Lower North</i> Subarea:</u> Relative impact factors are: <ul style="list-style-type: none"> • High – flow volume • Moderate - total impervious area, road crossings • Low - % of high gradient streams Relative mitigative factors: <ul style="list-style-type: none"> • High - % of low gradient streams, wetland area • Low – forest cover, riparian forest cover <u><i>Upper North</i> Subarea:</u> Relative impact factors are: <ul style="list-style-type: none"> • High – flow volume, total impervious area • Moderate – road crossings • Low - % of high gradient streams Relative mitigative factors: <ul style="list-style-type: none"> • High - % of low gradient streams, wetland area • Moderate – riparian forest cover • Low – forest cover <u><i>Little Bear</i> Subarea:</u> Relative impact factors are: <ul style="list-style-type: none"> • High – flow volume • Moderate - % of high gradient streams, road crossings, total impervious area Relative mitigative factors: <ul style="list-style-type: none"> • High - % of low gradient streams, wetland area [rating changed per recent Snohomish Co. data] • Moderate - forest cover, riparian forest cover <u><i>Evans</i> Subarea:</u> Relative impact factors are: <ul style="list-style-type: none"> • Moderate – flow volume, total impervious area, % of low gradient streams • Low – road crossings Relative mitigative factors: <ul style="list-style-type: none"> • High - % of low gradient streams, wetland area • Moderate – forest cover, riparian forest cover

LAND USE ACTIONS FOR NORTH, LITTLE BEAR, EVANS CREEKS BASED ON TECHNICAL RECOMMENDATIONS IN WRIA 8 CONSERVATION STRATEGY

Notes:

- 1) Technical priorities from the WRIA 8 Conservation Strategy are listed in bold; recommended land use actions are listed for each technical area. Most technical recommendations are interrelated; many land use actions address multiple technical priorities.
- 2) Note that local jurisdictions are doing or planning to do many of these actions.
- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.

Protect forest cover and soil infiltrative capacity, wetland areas, and minimize impervious areas, to maintain watershed function and hydrologic integrity (especially maintenance of sufficient base flows) and protect water quality. North is largest of Tier 2 subareas and most likely to have historically supported Chinook; restoration and enhancement will likely increase productivity/abundance. Little Bear is least altered of Tier 2 subareas and may support productivity/abundance in short and long term; protection of ecosystem processes is therefore important.

N67 North, Little Bear, and Evans subareas are facing intense growth pressure. Therefore, the following actions are essential:

- ✓ Jurisdictions should not move the UGA boundary, unless such change is beneficial to salmon. Jurisdictions should accommodate most new growth inside the UGA within existing incorporated areas, MUGAs, and PAAs. When considering a change to the Urban Growth Boundary, a jurisdiction should be required to evaluate and mitigate for the cumulative impacts to the salmon resource of changing that line.
- ✓ Manage new residential, commercial, and industrial development in urban or rural areas to minimize impacts on forest cover, aquatic buffers, water quality, and instream flows, by emphasizing low impact development (see specific recommendations on low impact development below under *water quality*).
- ✓ Where regulations and incentives are not effective, acquire key habitat as current opportunities for protection will be lost forever.
- ✓ Public education and outreach related to impacts of growth/development on salmon habitat are necessary to support effective implementation of land use actions discussed below. Work with existing organizations (e.g., Adopt-A-Stream Foundation, Little Bear Creek Protective Association) on education and outreach.

N68 Brightwater wastewater treatment plant will affect watershed function both on and off site. The following actions should be implemented:

- ✓ In terms of onsite features, support King County's plans to incorporate reforestation, wetland restoration, and low impact development features as part of its stormwater management system.
- ✓ Brightwater mitigation will fund a number of offsite mitigation projects. Selection of mitigation projects should be based on WRIA 8 action lists and priorities. Mitigation projects should include support for local jurisdiction planning to encourage low impact development, projects that protect watershed function, and stream restoration and water quality improvements in Little Bear Creek.
- ✓ Brightwater should be used as a growth management tool, e.g., to limit sewer service in rural areas and to encourage it for redevelopment of urban villages and other high density, mixed use areas within the UGA.

N69 In rural areas, adopt and enforce regulations and incentives to protect majority of existing forest cover and to minimize impervious areas. Development practices in rural areas are promoting sewer hookups, allowing additional urban type development; this practice should be discouraged.

Applications of rural standards should consider:

- ✓ Where 65-10 is adopted, forest protection standards should take into account soils, substrate, topography, and vegetation to maximize retention and infiltration of precipitation.
- ✓ Where 65% forest protection standard is not applied, consider modifying rural cluster development standards so they include LID features, they preserve large contiguous natural areas, and they are limited in size (e.g., to 14 houses per development) in order to achieve overall goal of 65% forest retention.

- ✓ Incentives are also necessary to encourage reforestation of cleared land; see tools below under *riparian function*.
- N70 In urban areas, protect and restore forest cover through tree retention and tree replacement programs, landscaping guidelines, street tree programs, and urban reforestation programs (e.g., King County's Urban Forestry Program). Could require that new development over a certain size use clustering to preserve a certain portion of open space (e.g., 50% of site). If developer protects more open space, could offer incentives, such as density bonuses.
- N71 In North Creek subarea, there are serious flooding and peak flow issues. Protect remaining forest cover and wetlands, and reduce impervious surfaces, through critical areas ordinances, stormwater regulations and best management practices, incentives (e.g., tax breaks, expedited permitting), and acquisition where regulation and incentives are not sufficient protection. Support update of 1993 North Creek Watershed Plan and 2002 Drainage Needs Report to address groundwater detention and recharge issues. See also recommendations about North Creek under *adequate stream flows* below.
- N72 Use flexible development tools, such as transferable development rights (TDRs) or environmental mitigation banking, to shift development to areas which are less environmentally sensitive and/or to mitigate impacts by restoring areas with highest ecological functions. In Snohomish County, encourage use of TDRs to protect farmland in the near-term and forests and wetlands in the future. In King County, encourage use of mitigation reserve areas; this program matches mitigation needs with habitat restoration and preservation needs on a subbasin or basin level.
- N73 Continue to acquire parcels or conservation easements along creeks and upland that are not sufficiently protected by regulations (e.g., NTAA mentions Evans Cr. Greenway program, Snohomish County's ESA Priority Land Acquisition Program). See discussion of maintenance of protected lands below under *riparian function*.
- N74 Identify and protect headwater areas, including seeps, springs, wetlands in all three subareas. Do additional mapping and field monitoring to determine critical groundwater recharge areas to protect. Consider using critical aquifer recharge area (CARA) protections more broadly to protect groundwater recharge for maintaining cold temperatures in fish bearing streams, rather than solely for groundwater quality protection for potable water supply. Work to avoid possible road construction in Evans Creek headwater wetlands as part of development of Redmond Ridge East, an Urban Planned Development/Fully Contained Community (UPD/FCC), which is the final phase of Redmond Ridge UPD east of the City of Redmond.
- N75 Protect wetlands and their buffers through critical area ordinance (CAO) revisions. Where wetland protection regulations are weakened, seek alternative means through incentives or acquisition to maintain equal level of wetland function.
- N76 Recognize importance of enforcement for these and all regulatory recommendations included below. Note that public education about why regulations exist is key part of making enforcement more effective. Effective enforcement must also include monitoring and adaptive management, so that effectiveness of regulations (and related mitigation projects) is measured, and adjustments are made over time.

Protect and restore riparian function, including revegetation, to provide sources of large woody debris to improve channel stability, contribute to pool creation, to reduce peak water temperatures.

- N77 Continue to tighten regulations affecting riparian buffers, including larger stream buffers, more restricted application of buffer averaging, fewer allowable uses in buffers (e.g., not allowing trails and stormwater facilities). Could approve administrative variances of development standards (on case-by-case basis) in order to avoid encroaching into a sensitive area buffer.
- N78 Nonconforming uses are significant challenge in developed areas. Many existing structures along creeks encroach into required stream buffers and are nonconforming with development and environmental regulations. The degree of nonconformity could become even greater as buffers and other riparian protections become more restrictive. In order to decrease the level of nonconformity over the long term (e.g., 50 years), local jurisdictions should encourage or require that development come into conformity, depending on the degree of redevelopment. A sliding scale could be applied (e.g., based on redevelopment thresholds), where the greater the degree of redevelopment, the greater the expectation that the development come into compliance.
- N79 Encourage or require revegetation and enhancement of riparian buffers where existing buffer vegetation is inadequate (i.e. lacking in tree/shrub vegetation or dominated by non-native invasive species) to restore wetland or stream functions. Restoration should include underplanting of conifers

in riparian buffers. Consider flexibility in prescriptive buffer width standards in exchange for stream habitat and buffer enhancement, particularly for redevelopment. However, any granting of regulatory flexibility needs to analyze site-specific tradeoffs – including upland land use impacts to the creek - to insure a net benefit to salmon.

- N80 Offer existing and new incentives to continue to protect and restore riparian and upland parcels beyond those that are protected through regulations. Incentives include current use taxation (e.g., Public Benefit Rating system – PBRs), Native Growth Protection Area programs, transfer of development rights programs.
- N81 Protection programs should include a stewardship element to ensure management and maintenance of these natural areas over the long term. Maintenance can be handed over to a local jurisdiction for public management, or if areas are managed privately or by non-profit organizations, standards for review and enforcement should be established. Regardless of what type of organization manages the area, long term stewardship and maintenance is a real cost and should be planned and accounted for. One approach in NLW Tier 2 combines resources of public, private, and non-profit organizations: In Evans subarea at Redmond Ridge UPD, Cascade Land Conservancy (CLC) is working with King County and Quadrant to secure funding so that CLC will both maintain recreational facilities and provide hands-on monitoring, adaptive management, and stewardship at a protected wetland site, as well as work with the homeowners association and nearby schools to make them more aware of wetlands/watershed issues.
- N82 Specific areas should be targeted for incentives to restore degraded riparian buffers; these areas include Lower Evans, Little Bear below Maltby Rd., North Creek south of SE 164th St. (as noted in NTAA). Technical Committee discussed lack of buffer in lowest reaches of Evans (Redmond's industrial area); should offer incentives to improve stream corridor in Reach 2 through redevelopment and/or through stormwater retrofit. Incentives to encourage voluntary revegetation of riparian buffers and/or reconnection of floodplains include:
 - ✓ Provide expertise (e.g., provide templates for riparian planting plan, assist private landowners with applications for grants to restore habitat)
 - ✓ Expedite permit process at local, state and federal levels (e.g., allow more restoration activities as shoreline exemptions to make permitting faster and less costly)
- N83 In order for incentive and technical assistance programs to be effective, they must receive adequate funding and be supported by technically trained staff.

Protect and improve water quality to prevent adverse impacts from fine sediments, metals (both in sediments and in water), and high temperatures to key Chinook life stages.

Adverse impacts from road runoff should be prevented through stormwater BMPs and the minimization of the number and width of roads in the basin.

- N84 Washington Dept. of Ecology is updating the Phase 1 NPDES permit now and anticipates new permits will be issued to Snohomish and King Counties in spring 2005. In the long term, stormwater management programs should try to return more rainwater into the ground and keep it out of stormwater ponds with controlled discharge structures. Local and state government should use the NPDES permits to address these strategies in conjunction with salmon protection under ESA. King County's stormwater manual update places greater emphasis on low impact development BMPs; other jurisdictions should follow this approach.
- N85 All cities in NLW Tier 2 subareas are scheduled to be issued NPDES Phase 2 permits in the next year. As with Phase 1, these permits should address water quality and flow issues that affect salmon habitat, as detailed in the actions listed below.
- N86 Adopt stormwater BMPs to reduce sediment inputs from bank-scouring high flows.
- N87 Adopt stormwater BMPs to address heavy metals and pollutants.
- N88 Adopt source control BMPs to reduce fine sediment inputs to system (e.g., from new construction, erosion, and sedimentation from livestock access to streams). Enforcement is currently reactive (i.e., complaint driven); it should be more proactive (e.g., targeting construction sites, problem farms). Enforcement of stormwater regulations, as well as of critical areas requirements, could be strengthened through a "green" inspector group that would share expertise about various environmental incentives and regulations. Adequate enforcement staff should be made available in all jurisdictions.
- N89 Work with businesses in Evans Reach 2 on BMPs; explore options for getting businesses off septic systems and wells, and onto sewer and public water.

- N90 Work with livestock owners on BMPs in Little Bear and Evans. Address institutional barriers to stream restoration in agricultural use areas in Evans, Reaches 4 and 5.
- N91 Jurisdictions should control new development to minimize impacts on water quality, instream flows, and aquatic buffers, through low impact development. Jurisdictions should consider a moratorium on development until a specific low impact development standard is adopted. Low impact development (LID) in new and existing development can be encouraged through regulations, incentives, and education/training; examples include:
- ✓ Develop, adopt, and update as needed, local regulations and ordinances that improve the ability of builders to design LID projects, and for local government staff to review and approve those projects. For example, local staff from fire, surface water management, building, and public works departments have different responsibilities related to public and private development, and need to find solutions which can support LID. Local staff should coordinate with Department of Ecology, Puget Sound Action Team, and Washington State Cooperative Extensive Service staff working on LID issues. Snohomish County has adopted a Reduced Drainage Discharge Demonstration Programs; participation in the program is voluntary and incentive driven.
 - ✓ Analyze local road standards so that they promote, and don't discourage LID, in public and private roads; see details below.
 - ✓ Requirements for engineered stormwater facilities should be decreased for low-impact developments, since they should produce less runoff.
 - ✓ Encourage low impact development by providing technical assistance, incentives (e.g., PBRs-type tax break), and demonstration projects so that other planners and developers can see hands-on examples.
 - ✓ Benefits and tradeoffs (in terms of stormwater management, cost, marketability) need to be illustrated based on real life examples. Existing examples include Maltby Joint Ventures-Chinook Homes, King County's three LID demonstration projects, Seattle's natural drainage program for retrofitting existing neighborhoods, Issaquah Highlands.
 - ✓ Monitor existing facilities (e.g., green roofs, permeable pavements, etc.) to improve understanding of and quantify benefits of LID techniques.
 - ✓ Investigate and implement low-cost stormwater control retrofit projects in key groundwater infiltration areas to reduce stormwater runoff; this includes retrofitting existing properties with amended soils, rain gardens, rain barrels, and other low cost tools that can be installed without purchase of new land or development of new stormwater facilities.
 - ✓ Mitigation for development impacts should increasingly include partnering with owners of large parking lots (e.g., big box stores, churches, schools) to replace impervious surfaces with pervious concrete and other pervious pavements. Such public/private partnerships will provide multiple benefits of pervious pavements (e.g., water quality treatment, reduced temperature, high flow attenuation, low flow recharge).
 - ✓ Support task forces (e.g, Snohomish Co. Sustainable Development Task Force) and citizen organizations which are working to promote sustainable and low impact development.
- N92 Jurisdictions should invest in high performance street sweepers. These sweepers can be cost-effective if shared among jurisdictions. They are recommended for cleaning pervious pavements.
- N93 Through planning for new roads or road widening projects, assess and recommend ways to minimize impacts on water quality, instream flows and sensitive areas. Low impact development includes BMPs for narrower roads, more pervious surfaces, reduced parking areas, maximized infiltration of stormwater, etc. Road widening should incorporate fish friendly culverts and drainage away from direct discharge of road runoff.
- N94 Adopt and implement Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines for maintaining existing roads and drainage systems.
- N95 Retrofit existing roads to improve water quality treatment and flow control with an emphasis on infiltrating stormwater wherever it is feasible. Need BMPs for herbicides and pesticides along roads and power lines.
- N96 A Water Cleanup Plan (i.e., TMDL) for bacteria in North Creek was approved by EPA in August 2002, and a Detailed Implementation Plan (DIP) was completed September 2003. The North Creek Fecal Coliform DIP calls for local governments to develop "Bacterial Pollution Remediation Plans." Local jurisdictions should develop and implement these plans through their General Municipal Stormwater Phase I and II permits. While the TMDL did not specifically analyze low-flow trends in North Creek, it does take a conservative approach to protecting stream flows and recommends infiltration of stormwater wherever feasible. This not only prevents the introduction of polluted stormwater, but also will help ensure that adequate long-term groundwater resources might be protected. The TMDL

recommends that all entities examine their stormwater pathways and assess the feasibility of infiltrating stormwater onsite. Ecology should support TMDL implementation through the Centennial Clean Water Fund, along with other funding mechanisms.

- N97 Ecology has also initiated a Water Cleanup Plan (TMDL) for bacteria on Little Bear Creek (August 2004). Ecology should work with Snohomish County and groups such as Little Bear Creek Protective Association, to develop the initial water cleanup plan for submission to EPA. Little Bear Creek Water Cleanup implementation might include resources from the Brightwater mitigation funding.
- N98 Recognize and support the state Dept. of Ecology in adding three stormwater staff at NWRO to oversee compliance with industrial and construction general permits in the winter of 2004-5. Ecology also anticipates adding two additional stormwater staff to inspect stormwater at industrial and construction facilities in July 2005, and up to 3 staff to oversee compliance with the Phase II Municipal Stormwater Permit in July 2005, pending legislative approval.

Maintain and restore floodplain connectivity and channel complexity. Road crossings should be minimized to maintain floodplain connectivity.

- N99 Limit new development (including roads) in floodplains; develop and apply standards which minimize impacts to salmon.
- N100 Continue to buyout structures in floodplains, for future restoration projects.
- N101 Offer incentives and regulatory flexibility to encourage removal of bank armoring; see detailed examples described above under *riparian function* and *water quality*.

Provide adequate stream flow to allow upstream migration and spawning by establishing in-stream flow levels, enforcing water rights compliance, and providing for hydrologic continuity.

- N102 Address maintenance and restoration of instream flows at all levels of government, recognizing that different aspects of the problem are controlled by different government agencies, e.g., water withdrawals are regulated by State Dept. of Ecology, low impact development techniques are affected by local development standards and practices.
- N103 Determine extent of unauthorized withdrawals in all sectors (residential, commercial, industrial). Develop and/or use existing database on extent of surface and groundwater withdrawals.
- N104 Work with Dept. of Ecology on education about and enforcement of unauthorized water withdrawals (e.g., un-permitted withdrawals, permitted withdrawals that exceed authorized volumes). Note that the Greater Lake Washington basin is currently closed to new surface water withdrawals.
- N105 Certain groundwater withdrawals are exempt from Ecology regulation; these exempt wells include wells serving residences not exceeding 5000 gallons a day (also referred to as 6-packs, or not more than 6 homes on one well), watering of a lawn or garden not exceeding ½ acre. WRIA jurisdictions should work with Dept. of Ecology, local departments of health, and local planning and building departments (e.g. KC DDES) to more effectively monitor and enforce restrictions related to exempt wells. Jurisdictions should consider addition restrictions on exempt wells, e.g., KC Comprehensive Plan proposed revisions include policies that would limit 6 packs – i.e., no more than one exempt well per development - and encourage users to hookup to existing water systems.
- N106 Adopt/enforce stormwater regulations and BMPs to address high and low flows, including forest retention, low impact development, and infiltration standards. Explore opportunities during redevelopment to improve management of flows and water quality by redesigning and retrofitting stormwater facilities. Identify opportunities to retrofit stormwater retention/detention facilities to better retain, release, treat, and infiltrate stormwater at public and private facilities. See additional stormwater management recommendations above under *protecting water quality*.
- N107 Inadequate base flows, flooding, and flashy hydrology pose serious problems in North Creek (see additional actions above under *forest protection*). Address these through stormwater management (e.g., improved retention of high flows and increased infiltration), improved information about and enforcement of surface and groundwater withdrawals, TMDL implementation, more aggressive water conservation, etc. Analyze feasibility of restoring base flows in North Creek by:
 - ✓ Studying where retrofitting stormwater facilities could have greatest benefit in restoring base flows and implement results (in part through redevelopment opportunities).
 - ✓ Exploring augmentation of flows, potentially by pumping or injecting treated water into shallow or deeper aquifers to the infiltrative layer, during extreme dry season low flow conditions.

- N108 Reduce inflow and infiltration (I&I), which captures and diverts ground and surface water into storm or wastewater pipe systems and removes it from the basin's water budget.
- N109 Aggressive water conservation measures should be promoted by all jurisdictions and water purveyors to reduce impacts of water withdrawals throughout WRIA 8. Water conservation measures could include leak detection and repair, pricing structures that encourage more efficient water use and eliminate subsidies to large water users, water efficiency audits, and rebates for commercial and residential water-efficient plumbing fixtures and appliances. Water re-use should also be considered as a way to reduce demand.
- N110 Look into other water resource allocation processes that could suggest potential actions for this basin (e.g., 2514 processes elsewhere, state law on water conservation – 1338).

LAND USE, PLANNING, AND INFRASTRUCTURE ACTIONS FOR NLW POPULATION (Kelsey Creek, Tier 2 subarea)	
POLICY/INSTITUTIONAL CONTEXT:	SCIENCE CONTEXT:
<p>Jurisdictions: City of Bellevue</p> <p>Growth pressures (inside UGA): City of Bellevue and Bellevue Potential Annexation Areas (PAAs).</p> <p>Percent of basin inside UGA: 100% within the UGA</p> <p>Program/mitigation opportunities:</p>	<p>Watershed evaluation rating:</p> <ul style="list-style-type: none"> • Lower Kelsey Subarea: Tier 2 - Satellite Chinook use; Low watershed function • Upper Kelsey Subarea: Tier 2 - Satellite Chinook use; Low watershed function <p>Watershed evaluation summary:</p> <p><u>Lower Kelsey Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • High – flow volume, total impervious area, road crossings • Low - % of high gradient streams <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams, wetland area • Low – forest cover, riparian forest cover <p><u>Upper Kelsey Subarea:</u> Relative impact factors are:</p> <ul style="list-style-type: none"> • High – flow volume, total impervious area, road crossings • Low - % of high gradient streams <p>Relative mitigative factors:</p> <ul style="list-style-type: none"> • High - % of low gradient streams • Low – forest cover, riparian forest cover, wetland area

LAND USE ACTIONS FOR KELSEY CREEK BASED ON TECHNICAL RECOMMENDATIONS IN WRIA 8 CONSERVATION STRATEGY

Notes:

- 1) Technical priorities from the WRIA 8 Conservation Strategy (and the 1/21/04 WRIA 8 Technical Committee meeting) are listed in bold; recommended land use actions are listed for each technical area. Most technical recommendations are interrelated; many land use actions address multiple technical priorities.
- 2) Note that City of Bellevue is doing or planning to do many of these actions.
- 3) See also Appendix D for a menu of land use actions described by criteria, and references on low impact development, critical areas and other land use topics.

Protect existing levels of forest cover, soil infiltrative capacity and wetland areas, and minimize impervious areas, to maintain watershed function and hydrologic integrity (especially maintenance of sufficient base flows) and protect water quality.

- N111 Consistent with Growth Management Act, Bellevue should continue to absorb much new residential, commercial, industrial growth. Regulate new development to minimize impacts on water quality, instream flows, and aquatic buffers consistent with City's critical areas regulations. See specific recommendations for low impact development below under *water quality*.
- N112 Protect and restore forest cover through tree retention and tree replacement programs (especially in large parking lot areas), landscaping guidelines, street tree programs, and urban reforestation programs. Establish impervious surface limits within all zoning districts except Downtown. Work with Transportation Dept. on landscaping guidelines and give credit for stormwater BMPs and low impact development techniques.
- N113 Consider stricter protections for Kelsey Creek subareas, given their importance to Chinook population. Such protections could be achieved through overlay zones, or through the application of an "off ramp" (or biological evaluation) mechanism.

- N114 Encourage clustering for those sites that are two acres or more in size and that are significantly constrained by critical areas (more than 20% of gross site area), or where large amounts of open space can be effectively set aside for conservation or other open space purposes. Such a provision will: result in better management of critical areas by consolidating them in separate tracks not lots, ensure efficient compact communities, and result in reduced demand for point discharge stormwater facilities, further relieving impacts on critical areas downstream.
- N115 Use flexible development tools, such as transferable development rights or environmental mitigation banking, to shift development to areas which are less environmentally sensitive and/or to mitigate impacts by restoring areas with highest ecological functions.
- N116 Review City policy regarding land acquisition and restoration of critical habitat (including floodplains, wetlands and wildlife habitat) to ensure that all departments have acquisition of open space as a high priority.
- N117 Recognize that existing public open space serves multiple functions ranging from critical habitat to recreational use. Tailor regulation to ensure those areas most suited to habitat protection are insulated from impacts and wildlife is protected from harassment (e.g. could limit board walks in wetlands). Other open space areas are more appropriate for multiple uses, including education and recreation. Where multiple uses are allowed, urban infrastructure including utilities, roads and passive recreational amenities such as trails, boardwalks, and bridges should be planned and designed to prevent impact to the environmental values and benefits of the site.
- N118 Acquire parcels or conservation easements along Kelsey Cr, as identified in Greenways Program, that are not protected by regulations (NTAA, P2).
- N119 Maintain or increase Bellevue's Native Growth Protection Area Program to acquire lands.
- N120 Identify and protect headwater areas, including seeps, springs, wetlands in Upper Kelsey subarea. Do additional mapping and field monitoring to determine critical groundwater recharge areas to protect. Consider using critical aquifer recharge area (CARA) protections more broadly to protect groundwater recharge for maintaining cold temperatures in fish bearing streams, rather than solely for groundwater quality protection for potable water supply.
- N121 Wetlands in Kelsey subareas are in relatively good shape; protect wetlands and their buffers through science –based CAO revisions.
- N122 Where impacts to wetlands are unavoidable, mitigation shall occur on site first and then within the basin if no feasible alternative exists on site.
- N123 Recognize importance of enforcement for these and all regulatory recommendations included below. Note that public education about why regulations exist is key part of making enforcement more effective. Effective enforcement must also include monitoring and adaptive management, so that effectiveness of regulations (and related mitigation projects) is measured, and adjustments are made.

Protect and restore riparian function, including revegetation, to provide sources of large woody debris to improve channel stability, contribute to pool creation, to reduce peak water temperatures.

- N124 Offer existing and new incentives to continue to protect and restore riparian and upland parcels beyond those that are protected through regulations. Incentives include current use taxation (e.g., Public Benefit Rating system – PBRS), Native Growth Protection Area program, transferable development rights programs. Protection programs need a stewardship element to ensure management and maintenance of these areas over the long term. Maintenance can be handed over to the city for public management, or if areas are managed privately, standards for review and enforcement must be established. If areas are privately managed, may be necessary to provide an inducement (e.g., additional tax break) in addition to education about value of properties and importance of maintenance.
- N125 Adopt special use guidelines to allow public access in some riparian buffers, where public use would increase education about riparian buffer functions. Recognize tradeoff between potential environmental impacts and benefits of public education.
- N126 Require where feasible the use of bioengineering techniques to stabilize channel and streambank conditions including, the use of large woody debris and underplanting of conifers in riparian buffers.
- N127 With new development and redevelopment, require the removal of invasive species and prohibit the planting of inappropriate (invasive) non-native vegetation adjacent to riparian corridors and throughout the basin.

- N128 Continue to tighten regulations affecting riparian buffers, including more restricted application of buffer averaging, fewer allowable uses in buffers (e.g., not allowing stormwater facilities). Could approve administrative variances of development standards (on case-by-case basis) in order to avoid encroaching into a sensitive area buffer.
- N129 Nonconforming uses are significant challenge. Many existing structures along creeks encroach into required stream buffers and are nonconforming with development and environmental regulations. The degree of nonconformity could become even greater as buffers and other riparian protections become more restrictive. In order to decrease the level of nonconformity over the long term (e.g., 50 years), Bellevue should encourage or require that development come into conformity, depending on the degree of redevelopment. A sliding scale could be applied (e.g., based on redevelopment thresholds), where the greater the degree of redevelopment, the greater the expectation that the development come into compliance.
- N130 Encourage revegetation and enhancement of riparian buffers where existing buffer vegetation is inadequate (i.e. lacking in tree/shrub vegetation or dominated by non-native invasive species) to protect wetland or stream functions. Restoration should include underplanting of conifers in riparian buffers. Consider flexibility in prescriptive buffer width standards in exchange for stream habitat and buffer enhancement, particularly for redevelopment. However, any significant regulatory flexibility needs to be accompanied by site specific analysis to identify site-specific tradeoffs – including upland land use impacts to the creek - to insure a net benefit to salmon. This can be achieved through programmatic review as part of a detailed mitigation “template” or through individual site review.
- N131 Offer incentives to encourage voluntary revegetation of riparian buffers and/or reconnection of floodplains. Incentives include:
- ✓ Provide expertise (e.g., provide templates for riparian planting plan, assist private landowners with applications for grants to restore habitat)
 - ✓ Expedite permit process at local, state and federal levels (e.g., allow more restoration activities as shoreline exemptions to make permitting faster and less costly)
- N132 Remove regulatory barriers that limit work within floodplains and riparian corridors to allow for fish habitat enhancement projects.
- N133 Ensure that mitigation and restoration projects associated with new development and redevelopment specify appropriate monitoring, and require financial assurance security to ensure the success of the proposed mitigation.

Protect and improve water quality to prevent adverse impacts from fine sediments, metals (both in sediments and in water), and high temperatures to key Chinook life stages.

- N134 Adopt NPDES Phase 2 permit, consistent with anticipated Dept. of Ecology guidance.
- N135 Stormwater regulations need to adopt a standard definition of “existing conditions” so that stormwater management will be improved during redevelopment. There is currently a lot of redevelopment being done without stormwater mitigation. WRIA 8 could facilitate a discussion across jurisdictions to develop a common definition. If stricter definition is adopted, public should help pay for stormwater improvements.
- N136 Control new development to minimize impacts on water quality, instream flows, and aquatic buffers. Encourage low impact development (LID) through regulations, incentives, and education/training. Examples include:
- ✓ Encourage low impact development by providing technical information to developers about on-the-ground examples of what does and does not work in LID approaches; promoting demonstration projects through incentives and technical assistance, so that other planners and developers can see hands-on examples.
 - ✓ Existing examples to show developers and planners include King County’s three LID demonstration projects currently underway, Seattle’s natural drainage program for retrofitting existing neighborhoods. Bellevue’s development manual will provide technical examples for developers and homebuilders about LID techniques.
 - ✓ Promotion of LID techniques in Bellevue will require interdepartmental coordination, i.e., between PCD, Transportation, Utilities and Fire departments.
 - ✓ Bellevue has hired a consultant to evaluate applicability of various LID techniques given geology, soil types, slope, etc. to more realistically assess LID opportunities throughout the city.
 - ✓ Monitor existing facilities (e.g., green roofs, permeable pavements, etc.) to improve understanding of benefits of LID techniques (NTAA, R4 and R5).
- N137 Identify sources and adopt source control BMPs to reduce fine sediment inputs to system.

- N138 Adopt stormwater BMPs to reduce sediment inputs from bed scouring high flows.
- N139 Adopt stormwater BMPs to address heavy metals and pollutants. Note various research actions regarding water quality (NTAA, R7-11).
- N140 Enforcement is currently reactive (i.e., complaint driven); it should be more proactive as it relates to protection of critical areas. Enforcement of stormwater, as well as of critical areas requirements, could be strengthened through a “green” inspector group that would share expertise about various environmental incentives and regulations.
- N141 Note that in addition to enforcement of stormwater standards by local jurisdictions to comply with their NPDES permits, the state Dept. of Ecology is adding three stormwater staff at NWRO to oversee compliance with industrial and construction general permits in winter 2004-5.

Adverse impacts from road runoff should be prevented through stormwater best management practices and minimization of number and width of roads in the basin. Opportunities to retrofit existing roadways with stormwater treatment BMPs should be pursued. Road crossings should be minimized to maintain floodplain connectivity.

- N142 Through planning for new roads or road widening projects, assess and recommend ways to minimize impacts on water quality, instream flows and sensitive areas. Low impact development includes BMPs for narrower roads, more pervious surfaces, etc.
- N143 Adopt and implement Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines for maintaining existing roads and drainage systems.
- N144 Retrofit existing roads to improve water quality treatment. Need BMPs for herbicides and pesticides along roads and power lines.
- N145 Limit new development (including roads) in floodplains, except in accordance with critical area regulations.
- N146 Continue to buyout structures in floodplains.

Provide adequate stream flow to allow upstream migration and spawning by establishing in-stream flow levels, enforcing water rights compliance, and providing for hydrologic continuity.

- N147 Address maintenance and restoration of instream flows at all levels of government, recognizing that different aspects of the problem are controlled by different government agencies, e.g., water withdrawals are regulated by State Dept. of Ecology, low impact development techniques are affected by local development standards.
- N148 Determine extent of unauthorized withdrawals in all sectors (residential, commercial, industrial). Develop and/or use existing database on extent of surface and groundwater withdrawals.
- N149 Evaluate various flow data, stormwater facility operations, etc. to better understand stream flows and impacts on stream stability (NTAA, R1,2,3,5).
- N150 Adopt/enforce stormwater regulations and BMPs to address high and low flows, including forest retention, low impact development, infiltration standards.
- N151 Identify opportunities to retrofit stormwater retention/detention facilities to better retain, release, treat, and infiltrate stormwater at public and private facilities (NTAA, AA4).
- N152 The limitations of available riparian land to help mitigate stormwater along urban watercourses are contributing to destabilizing flows for fish. Bellevue should identify opportunities to plan new or retrofit existing facilities on publicly-owned riparian land to help stabilize urban stormwater flows and temperatures (i.e. there are opportunities to use public parks and sports fields as multifunction stormwater facilities). Some parks and open space lands could be used to develop in-stream facilities (e.g., pond storage) for flow amelioration.
- N153 Water conservation measures to encourage the efficient use of water should be promoted by City of Bellevue to reduce impacts of water withdrawals throughout WRIA 8. Water conservation measures could include leak detection and repair, pricing structures that encourage more efficient water use, water efficiency audits, and rebates for commercial and residential water-efficient plumbing fixtures and appliances.
- N154 Look into other water resource allocation processes that could suggest potential actions for this basin (e.g., 2514 processes elsewhere, state law on water conservation – 1338).